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AUTHOR Elmore, Richard F.
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ABSTRACT

Addressed primarily to practitioners--legislators, administrators, and their staffs--this monograph is structured around a series of hypothetical exchanges between legislators and administrators concerning the implementation of a basic skills program. The author asserts that the hierarchical control that legislators traditionally rely on for program implementation is contrary to the need for subordinates to exercise delegated control (individual responsibility, initiative, and discretion) over their own actions. Since the most important interaction in education takes place between students and teachers, he stresses the importance of focusing attention on the classroom in solving implementation problems. This approach is patterned on a programmatic view that emphasizes delegated control and service delivery capacity rather than a regulatory view that emphasizes hierarchical control and compliance. Backward mapping, based on the assumption that implementation begins at the bottom, not at the top, is presented as a logical, although not a foolproof, strategy. (Author/WD)

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Complexity and Control: What Legislators and Administrators Can Do About Implementing Public Policy

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COMPLEXITY AND CONTROL: WHAT LEGISLATORS AND ADMINISTRATORS CAN DO ABOUT IMPLEMENTING PUBLIC POLICY

Richard F. Elmore
Institute of Governmental Research
University of Washington

U.S. Department of Education
Shirley M. Hufstedler, Secretary
Steven A. Minter, Under Secretary

Office of Educational Research and Improvement
F. James Rutherford, Assistant Secretary

National Institute of Education
Michael Timpane, Director
Marc Tucker, Associate Director for
Educational Policy and Organization

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Introductory Note

What have we learned from 15 years of large-scale state and Federal action in education? Extensive data and diverse interpretations are now available on the complexities and ambiguities of purposeful activity in large systems—in education and in other sectors. But the people involved, in legislatures, in executive agencies, and in schools, need from the research community not another weighty case study. What is needed is a review and synthesis of what is already on the books, and perhaps some new principles to guide a new generation of programs to be developed by the Department of Education and the states. What are we to make of the research on implementation? Where do we go from here?

We asked Dick Elmore to work on these questions, and the result is the lively and unusual monograph that follows. Dick, who is assistant director of the University of Washington's Institute of Governmental Research, brings to the task a firsthand knowledge of education gained through service in the U.S. Office of Education and from research studies on Follow Through, career education, school finance reform, and the innovation segment (Title IV) of the Elementary and Secondary Education Act. He has recently been advising the designers of President Carter's new youth education and employment initiative, based on his research.

The National Institute of Education contributes to improved educational practice and efforts to remedy inequities in educational opportunity by sponsoring not only individual research studies, but a variety of reviews and "translations," such as this monograph, as well. Specific program efforts, and each individual state, will have unique features that must be considered in thinking about any particular implementation. Nonetheless, we believe that a wide audience can benefit from taking account of the provocative ideas contained in Dick's "dialogues on implementation." We at NIE hope that this essay will be useful for legislators, governors, state and local educational officials, and interested citizens, and that it will offer a new perspective on the practical problems of carrying out large-scale improvements in schooling for America's children.

Fritz Mulhauser
Head, School Management and
Organization Studies Unit
National Institute of Education

Foreword

Legislators are bedeviled by the realization that too few people benefit from the social legislation designed to help them. Too often, legislative intent disappears into the administrative chasm between enactment and client. Executive departments charged with administering social programs are the most obvious targets for blame. Frustration at failure to achieve desired results leads legislators to propose legislative vetoes and to demand that departments tighten the screw by writing tougher regulations and providing more surveillance.

A dark, secret thought that haunts a growing number of legislators and administrators is that no one seems to have control over the system of delivering social services, no matter how specific the legislation nor how rigorous the regulations.

Professor Richard Elmore presents the thesis that the traditional attempts to control the system from the top down may well be part of the problem. In discussing the growing complexity of translating legislation into administrative action—the so-called implementation problem—Professor Elmore addresses the issue of how legislators and administrators can actually influence the implementation of policy. He maintains that influence can come only if policymakers recognize that the most important part of implementation takes place at the bottom of the system, not at the top. The more control exerted at the top, the less likely the desired results at the bottom, where the client is.

As a member of the Washington State Senate and chairman of the Senate Education Committee, I can say that Professor Elmore captures the legislator's dilemma as he takes us into a hearing room where a committee chairperson is questioning the head of a state education agency. In a series of dialogues, Professor Elmore explores the political, compliance, and programmatic issues in a new state initiative designed to address the problems of low test scores in math and reading. This monograph, both in substance and language, is written for practitioners—people at all levels of the system who have concern for program results. By examining the various kinds of problems, he makes clear the difference between a regulatory approach to implementation that stresses hierarchical control and compliance, and a programmatic approach that stresses delegated control and service delivery capacity.

Professor Elmore maintains that government has to be prepared for a trade-off. If more hierarchical control is exerted, agencies are more likely to get compliance, but it will come at the cost of greater complexity—the paper blizzard of regulations and reporting requirements that often appears to overwhelm the system with little payoff in performance. On the other hand, the programmatic approach relies on delegated control and an emphasis on raising delivery capacity at the expense of compliance. The first approach sees local variability as a threat to uniform program guidelines, while the latter capitalizes on the inventiveness of the people who are actually delivering the service and treats diversity as the best way to improve local programs

Even though one might argue with Professor Elmore's assessment of the potential for improving local capacity, it is difficult to imagine that a heavier dose of regulations and monitoring is going to have anything other than a negative effect. There may be more paper compliance, but better program performance cannot be forced. Professor Elmore believes: "When it becomes necessary to rely mainly on hierarchical control, regulation, and compliance to get the job done, the game is essentially lost."

Professor Elmore is not suggesting easy answers to the problems of complexity and control. But what he does do in this deceptively simple monograph is focus on the source of the policy problem—the point where that policy is being implemented. In education, that usually means the classroom, with the recognition that the most important interaction in education takes place between students and teachers. That is where attention should be focused to solve problems, and that is where resources and discretionary power should be concentrated.

Legislators and administrators, as well as service deliverers and clients, could benefit from the kind of clear, practical thinking that Professor Elmore presents in his essay. Our system of delivering social services appears unwieldy and incapable of being managed. Policymakers may well need to recognize the limits of control they have over the system and delegate more of that control to the people delivering the services.

Senator James A. McDermott
Chairman, Senate Education Committee
Washington State Senate

Complexity and Control: What Legislators and Administrators Can Do About Implementing Public Policy[1]

> *...there are limits to the human capacity to design and manage, by the political process, huge, complex, interdependent human and ecological systems, and...we are now pressing against those limits.*
>
> Rufus Miles

Complexity is probably the most troubling aspect of modern government. Nowhere is the effect of complexity more apparent than in the translation of legislation into administrative action—what we have come to call "the implementation problem." Most policies have their origin in a piece of legislation. Following on the heels of the legislation are a series of administrative actions—regulations, guidelines, budget decisions, reorganizations, and so forth—that express legislators' and administrators' expectations. As the complexity of government increases, the connection between legislative intent and administrative action becomes more difficult to follow.

This paper is intended to demonstrate how legislators and administrators can develop a common language for dealing effectively with the complexity of implementation. The paper is addressed primarily to an audience of practitioners—legislators, administrators, and their staffs—and only secondarily to an academic audience. It is written, to the best of my ability, in standard English rather than academic jargon, and it summarizes and amplifies recent research on the implementation of public policy. The major purpose, though, is not to review research but to turn that research into something useful for people who deal with implementation problems in their daily work.

The paper is structured around a series of exchanges between legislators and administrators. I have chosen this technique because it effectively demonstrates their shared responsibility for the success or failure of policy implementation. The exchanges are all fictitious, but I think they illustrate problems that are familiar to anyone who has worked on either side of the legislative oversight process.

The major theme of the paper is that the complexity of implementation requires a substantial rethinking of legislative and administrative

control. The traditional devices that legislators have relied upon to control policy implementation—more specific legislation, tighter regulations and procedures, centralized authority, and closer monitoring of compliance—probably have an effect opposite of that intended. Rather than increasing control, they increase complexity. And as complexity increases, control itself is threatened. Thus, this paper represents an attempt to develop alternatives to the traditional techniques of legislative and administrative control.

The signs of increasing complexity in policy implementation are clear to legislators and administrators in their daily work. The number of concurrences, signoffs, and agreements necessary to set a policy in motion increases as layers of policy accumulate. The number of individuals whose actions must be coordinated increases as new responsibilities are added to administrative agencies. Lines of responsibility become more difficult to follow, and the causes of failure become more difficult to trace. Complexity, in its most basic terms, is a function both of the *number of actors* and the *number of transactions among actors* required to accomplish a given task. Complexity stems not just from the sheer *size* of government but also from the *interdependence* of people within it.[2]

When we speak of government agencies or programs being "out of control," we generally mean that they are aimless, unresponsive to policymakers and clients, sluggish, uncoordinated, or self-serving. Control, then, consists of bringing administrative actions into line with the expectations of policymakers and citizens. But this general notion of control conceals two very different meanings: one meaning is the *control that superiors exercise over subordinates*, and the other is the *control that individuals exercise over their own actions*. In the first instance we are talking about *hierarchical control*—authority, supervision, regulation, and coercion—and in the second we are talking about *delegated control*—individual responsibility, initiative, and discretion. Common sense tells us that both kinds of control are required for successful implementation. Hierarchical control is the means by which policymakers (legislators and high-level administrators) affect the actions of subordinates (mid-level managers and service deliverers). But the administrative structure would soon collapse if individuals did not exercise some degree of responsibility, initiative, and control over their own actions. Imagine a group of policymakers presiding over a bureaucracy in which no one acted unless they were explicitly told to do something. The success of policymakers depends, to a very large degree, on the skill and initiative of policy implementors.

Hierarchical control and delegated control have very different effects on administrative complexity: the former leads to greater complexity, the latter to less. The more a government invests in hierarchical control, the more effort it devotes to writing regulations, specifying procedures, monitoring performance, and enforcing compliance. The more a government invests in delegated control, the more it relies on individual judgment as a substitute for complex administrative procedure, but the less assurance it has of strict compliance. The crucial trade-off for policymakers is between more complexity with greater hierarchical control and less complexity with greater delegated control.

In the discussion that follows, I suggest ways that legislators and administrators can attack problems of complexity and control in policy implementation. The discussion demonstrates, I think, that policymakers can become very skilled analysts of implementation problems without radically altering their established roles. The basic meaning of implementation analysis (as used in the context of this paper) is best captured by "foresight," which means simply "thinking and planning beforehand" or "previous consideration."[3] The analysis that we observe policymakers engaging in consists of reasoning through implementation problems *before* policy decisions are firmly made.

My purpose is *not* to convince legislators and administrators that they need another contingent of expert consultants, but rather to show how a systematic discussion of implementation issues can be introduced, without much trouble, into routine legislative oversight hearings. An important part of my argument is that responsibility for implementation rests jointly with legislators and administrators. The formal doctrine of separation of powers encourages us to think of implementation as purely an executive responsibility. But experience with the implementation of large-scale programs demonstrates that there is no clear boundary separating legislative and administrative responsibility. If legislators show a lack of concern for administrative feasibility in the drafting of legislation, or if administrators fail to communicate practical problems to legislators, or if administrators and legislators fail to address implementation issues in the oversight process, then the complexity of implementation will almost certainly overwhelm the intent of policy. For this reason, I do not treat implementation analysis as a special, highly refined area of expertise, but as a part of the ongoing interaction between legislators and administrators. The central focus of the discussion is the relationship between policymakers (legislators and high-level administrators) and service deliverers (mid-level managers

and direct service personnel). Implementation analysis consists, for our purposes, of systematically discovering ways to make effective connections between policymakers and service deliverers.

Regulatory and Programmatic Views of Implementation

To begin with a fairly common implementation problem that surfaces in a legislative hearing, we interrupt an exchange between the chairperson of a legislative committee and the head (commissioner) of a large executive agency. The chair has been reviewing a number of programs in the commissioner's agency, and has come to one that has been the subject of some criticism—call it the 320(d) program. The person who is directly responsible for administering the 320(d) program—call this person the program director—does not participate in this exchange, but is involved in subsequent exchanges.

Chair. *As you're probably aware, Commissioner, we've heard testimony from a number of people that funds from the 320(d) program are being misspent by local agencies—they're being used to fund questionable activities and they're not effectively reaching the target population. What is your estimate of the situation?*

Commissioner. *I am as concerned as you are about these criticisms of the program. I've asked for a complete review. You must understand our problem here, though. We're dealing with independent units of local government and they have ideas of their own about how to spend program funds. The 320(d) program gives local agencies a fair amount of discretion in the use of funds. We've written the regulations so as to spell out the purposes and activities that we have determined are consistent with legislative intent. But the law says that each agency is to construct its own program consistent with its own local needs.*

Chair. *Well what's the difficulty then? Why are we getting complaints? Do we need to amend the legislation to give your agency more control over local decisions? Do you need to rewrite the regulations? Or do you just need to tighten up your enforcement of existing regulations?*

Commissioner. *We're not absolutely certain ourselves what the solution is, but I expect the director's review will produce some recommendations that will help us decide what to do. I don't think I'm incorrect in saying, am I, that the intent of the legislation is not to preempt local decisions but to encourage local agencies to develop their own programs?*

Chair. *I think that is a correct statement of the intent. But it's also true, is it not, that when we find evidence that the program is not reaching the target population, we ought to do something about it?*

Commissioner. *Yes. If we find that agencies are not complying with the regulations and the intent of the law, we will act on those cases. Also, if we find that we need additional authority, we will ask for legislative amendments. Is that satisfactory?*

Chair. *Fair enough. We'll expect to hear from you in the near future.*

Commissioner. *As soon as the director's review is completed.*

This exchange illustrates most of the factors that define an implementation problem: the program has somehow missed its mark; the evidence that most troubles the chair is that local agencies are not serving the people whom the legislature intended them to serve. Is there something that can be done, either to the legislation or to the administration of the program, to remedy this problem? The commissioner is carefully trying to establish two basic points with the chair. The first is that responsibility for operating the 320(d) program is lodged with the program director; it is the director's responsibility to determine whether the program is missing its mark and, if a problem is actually found to exist, to develop a solution. The second point is that the operation of the program depends, in a very basic sense, on local agencies' taking responsibility for the program at the delivery level; if local agencies fail, the program fails.

Notice how the complexity develops. The chair and the commissioner are sitting at the top of a very tall pyramid trying to diagnose a problem that is occurring at the bottom. Between the top and the bot-

tom are at least two levels of administrative machinery: the director's office and a large number of local agencies. The complexity of the problem is a function of both the distance from the top to the bottom—the number of levels—and the number of actors at each level. The further down the pyramid we go, the larger the number of transactions necessary to get anything done. It is for this reason that delegated control is so important. The chair and commissioner cannot pretend to manage the director's program, nor can the director pretend to manage the wide variety of programs at the local level. Policy—legislation, regulations, guidelines, and informal agreements—is what holds the levels together, but delegated control is what makes the policy work at any given level.

Observe, also, that the chair and the commissioner seem to have agreed already on the solution to the problem—tighter regulation and more hierarchical control. Imagine the following scenario: The program director's study reveals that, indeed, there are examples of questionable local decisions. The chair, the commissioner, and the director agree that no new legislative authority is required, but that the director needs to tighten up monitoring of local spending. In operational terms, this means that the director's staff will spend a larger proportion of their time questioning local administrators about their program decisions. It also means that the regulations and guidelines that define legitimate local expenditures will become more complex and detailed, requiring more attention to compliance. As questions of compliance increase, the director's staff and local administrators will focus a larger proportion of their conversations with each other on interpretation of the rules.

The element that is missing in this scenario is any direct concern for *whether the program is actually working.* After all the rules and regulations are complied with, do we actually know that the beneficiaries of the program are better off? Does compliance ensure success?

The chair and the commissioner, without really intending to, have taken a *regulatory view* of implementation. They have, for the sake of simplifying their problem, chosen to equate success with tighter hierarchical control and greater compliance. The problem with this view is that, while we can demonstrate that greater hierarchical control produces greater compliance, we cannot assure that greater compliance produces better results. In fact, we could argue that, in some instances, there is a negative relationship between compliance and better results

because resources used for regulation cannot be used for service delivery. Regulation constitutes a diversion of resources from substance to surveillance.[4]

There is an alternative to the regulatory view that I call the *programmatic view*. This view focuses on delegated control instead of hierarchical control, and it defines the important issue not as compliance but as the *capacity to deliver a service*. To decide whether tighter regulation will solve their problem, the chair and the commissioner first must decide whether they are interested in compliance as an end in itself, or whether they are interested in compliance as a means of improving the performance of the 320(d) program.

In some instances, it makes sense to view compliance as the primary goal. Certain types of policies are primarily regulatory in intent, such as those dealing with school desegregation, affirmative action, auto emission standards, pure food and drug laws, and occupational safety and health standards. These policies exist to regulate private choices in accordance with public standards of equity and safety. Other policies, however, are not primarily regulatory in intent. Housing, education, social service, and health policies, for example, exist primarily to deliver services rather than to regulate private choices. For such policies, compliance is secondary to *improving and supporting the capacity of public organizations to deliver services*. The quality of public services depends heavily on delegated control; the choices that go into constructing an effective health care delivery program or an education program are too complex to be entirely structured by a uniform set of regulations. In fact, the quality of service and the capacity of the program to respond to human needs are often hindered rather than helped by hierarchical control.

In reality, all policies have elements of both compliance and capacity-building. Affirmative action is an essentially regulatory policy. Its objective is to hold employers to certain standards of equity in hiring and promotion. But affirmative action will fail as a policy if all it produces is compliance with regulations. If the net effect of affirmative action is to increase the body-count of certain types of people, without fully utilizing the skills and talents of those people, one could hardly say that the policy has been effective. Evidence of underemployment of skilled personnel would be a signal that affirmative action is not working in the programmatic sense, even though it might be working very well in the regulatory sense.

If regulatory policies have a programmatic component, the reverse is also true. Health care, social service, and education policies, for example, have to contain certain rules of financial accountability to guard against corruption and misuse of funds. Regulations are also necessary in service delivery programs as a way of establishing common ground rules for eligibility and termination of government grants. But we would not say that a service delivery program was effective simply because it produced compliance with these rules. More importantly, legislators and high-level administrators cannot improve the quality or capacity of service delivery organizations simply by regulating them. Quality depends mainly on the skills and competence of the people who actually deliver the service, and only secondarily on their compliance with rules and regulations.

For most legislators and administrators, implementation means writing and enforcing regulations. My aim is to demonstrate that solving implementation problems requires a broader, programmatic view. How would the exchange between the chair and the commissioner differ if they took a programmatic rather than a regulatory view of the problem?

The most obvious difference would be that the discussion would focus much more on service delivery than on regulation. So, in order to proceed, we need some more information about the 320(d) program. Assume the following: The 320(d) program grew out of concern by the State Legislature over declining test scores in reading and math achievement. After hearing testimony from a number of experts on testing, basic skills, and teaching, the Legislature's Education Committee settled upon a strategy. Local school districts would be asked to survey their student populations, using whatever instruments the districts felt were appropriate, and develop a plan for improving performance in reading and math. The state would offer supplementary grants to local districts, through the State Department of Education, for the purposes of assessing student needs, developing basic skill programs, and implementing them. To qualify for support, a local district would be required to submit a plan describing how it would identify students needing help and what services it would provide to those students. The State Department of Education would review the plans to ensure their consistency with the law and would provide assistance to local districts requesting help in starting programs. (In an effort to hold local districts accountable, the law required that "renewal of grants to local districts shall be conditioned on demonstrated progress

in achieving the objectives of the local plan," and gave the State Commissioner of Education the authority to establish criteria for determining whether local districts were making adequate progress.)

Taking the Programmatic View

Imagine 1 year later. Virtually every school system in the state is participating in the 320(d) program, and the State Department of Education has established an office, headed by the director, to administer the program. In a routine legislative oversight hearing involving a general review of the department's programs, the Education Committee hears testimony from parent representatives and an advocacy group representing disadvantaged children that local education agencies are "abusing" the 320(d) program by using it to support their general education program, rather than focusing the funds on children with serious problems in reading and math. Local school system representatives counter this criticism by arguing that local plans have been reviewed by the State Department of Education and found consistent with the law. The chairperson of the Education Committee asks the commissioner of education to present the department's case.

The following exchange—a replay of the first dialogue—shows how the chair and commissioner might attack the problem in a programmatic rather than a regulatory way.

> **Chair.** *As you're probably aware, Commissioner, we've heard testimony from United Parents for Education and the Children's Advocacy Group alleging that 320(d) funds are not reaching children with the greatest need for help in reading and math. Can you confirm or deny these reports? And can you explain why this appears to be happening?*
>
> **Commissioner.** *I've asked the Director of the 320(d) program to investigate this problem, and we've spoken at some length prior to this hearing. I've also asked the director to conduct a study and report back to me as soon as possible. At this point, we have several alternative explanations, and we're not sure which of them is correct.*
>
> *One explanation might be that local administrators are simply not paying adequate attention to the way they use*

320(d) funds. If this is true, our program staff simply has not been vigilant enough in monitoring compliance with program regulations. But I would stress that this is only one possible explanation.

Another one might be that some dispersion of funds is unavoidable if reasonably sound educational practice is followed. For example, the only way to ensure that the funds are targeted exclusively on children with serious basic skills problems is to isolate those children completely from the regular school program for all or part of the school day. But many teachers and school administrators would argue that we shouldn't isolate these children from the regular school program. This is a matter of professional judgment, and there's no real agreement on which is the best strategy. We know for sure, though, that if kids with basic skills problems are left in regular classrooms, there will at least be the appearance of diluting program funds.

Still another explanation might be that there aren't any clear-cut standards for what constitutes a basic skills deficit. Each school system has a different set of standards for deciding who needs help. Some systems concentrate on the fewest kids with the greatest needs. Some try to help everyone who falls below the national norm on a reading or math test. And some try to help those kids who are most likely to improve, which means less attention for the kids with the toughest problems. Again, these are professional judgments for which there aren't necessarily any correct answers.

So when you look at the program as a whole, you see a lot of variation in how local systems approach the problem of basic skills. Some of the variation may be due to poor administration, and some may be due to equally legitimate differences of approach.

Chair. *If I hear you correctly then, you're saying that the basic issue is how much local autonomy we're willing to permit in the program. Is that correct?*

Commissioner. *That's correct.*

Chair. *But if we allow local school systems complete freedom to decide who needs help, aren't we bound to see abuses and sloppy administration?*

Commissioner. *I'd like to think that our department can distinguish poor administration from legitimate professional judgments by local school people. I think the way to make that distinction is to look at the local program and ask administrators why they've chosen to design it one way or another.*

Chair. *Would it help to have clearer standards in the law about what kind of children should be served by the program?*

Commissioner. *It might. But I think we also ought to allow for the possibility that clearer standards might hurt the program. Right now we've got a lot of interesting and promising local programs going, largely as a result of the autonomy we've given local districts. I wouldn't like to see us restrict that diversity because of some standard we've established. Also, it's not clear to me that we know enough to say exactly who should be served by the program. I'm more comfortable giving that decision mainly to the people who are closest to the problem.*

Chair. *You seem to be telling me that there's nothing we can do to respond to criticisms coming from parents and other people who are also very close to the problem. With all due respect, I'm not sure I can accept that.*

Commissioner. *I'd like to be able to respond to those criticisms too, but I want to respond in a way that preserves the quality of local programs, rather than in a way that imposes our standards on local districts. If the program is going to work, the responsibility for evaluating performance and deciding what to do has to reside with those who are closest to the problem. We at the state level can support them. We can connect them with others who have experience and help them clarify what they're trying to do. But we can't make the program work. I'd like to be able to respond to criticisms of the program by putting the department in the*

role of supporting effective practices in local districts, rather than just policing them.

Chair. *Let's agree, though, that we've got to do something to respond to these criticisms and do it fairly quickly. We'll expect to hear from you in the near future.*

Commissioner. *As soon as the director's review is completed.*

What distinguishes this exchange from the previous one is its concern with program operations rather than regulation, with delegated control rather than hierarchical control. The chair is no less insistent on the seriousness of the problem; in fact, questions raised by the chair are sharper because they focus more specifically on program operations. Furthermore, the chair has not sacrificed the central legislative concern, constituent complaints. Nor can the chair be expected to care as much about administrative problems as the commissioner. The chair's major concern is political issues that arise in the implementation process. An important constituency has raised a question about the department's implementation strategy. The chair wants a satisfactory answer from the commissioner because—as a legislator and committee head—the chair's political survival depends largely on his ability to respond effectively to constituent claims. The chair's approach to questioning the commissioner demonstrates that legislators can take an aggressive programmatic stance on implementation issues without departing from their role as adjudicators of conflicting political interests.

The commissioner has managed to give a relatively complete account of the administrative problems raised by the 320(d) program, without suggesting that they are susceptible to a simple regulatory solution. The commissioner has also managed to communicate that the Education Department's interest in the program involves more than just policing compliance; it also involves supporting and guiding the development of effective local programs, which is a much more demanding (and, incidentally, more interesting) task. The commissioner is concerned about the stakes involved in the trade-off between hierarchical and delegated control. The commissioner understands that the more effort the department invests in enforcing compliance, the less resources it will be able to focus on program substance. It is also clear to the commissioner that variation in the way local districts res-

pond to the legislation can be an advantage as well as a disadvantage; that it can be a source of ideas for improving the program rather than a threat to authority.

Neither the chair nor the commissioner has compromised any essential responsibilities. But both have agreed to treat the issue as something more than a matter of regulation and compliance. They have demonstrated an implicit understanding of the costs of hierarchical control and the benefits of delegated control, without losing track of the essential purpose of the program.

Coping with Variations in Implementation

We have left the chair, the commissioner, and the director with a difficult problem: how to distinguish legitimate variations in the way local districts implement the 320(d) program from outright failures of implementation. The director will have to come to terms with this problem in reviewing the program. Any time a policy is implemented by more than one actor we can expect some variability. Whether we regard variability as good or bad depends on the standard we use. If we take a strictly regulatory view, our standard of success is compliance, and all variability is suspect because it suggests noncompliance. But if we take a programmatic view, our standard of success is the capacity of program participants to produce desired effects. If variability enhances the likelihood of program effectiveness, it is good; if it does not, it is bad. The important issue, then, is when does variability support and when does it undermine successful program operations.

We are tempted to say that the more implementors agree with the intent of a policy, the less variability we would expect in the way the policy is implemented. In fact, research on implementation suggests otherwise. We have already described one circumstance under which we would expect wide variations in the implementation of a policy, even when implementors agree on the intent—where there are legitimate professional differences on the most effective way to address a problem at the operating level. There are at least five additional circumstances under which we would expect variability in the presence of agreement.[5]

- *Incompatibility with other commitments.* Implementors typically have multiple responsibilities. No matter how much they agree

with the intent of a policy, they may have other responsibilities that conflict with or divert attention from it. How these conflicts and diversions are handled will vary among individuals and organizations. In the 320(d) program, school board members, administrators, curriculum specialists, and teachers are responsible for the total school program, one element of which is the state's basic skills program. They cannot all be expected to sort out competing commitments in the same way.

- *Variation in sense of urgency.* People cannot be expected to share the same sense of urgency in implementing a policy, even if they agree on its intent. The ability of individuals and organizations to focus on a policy depends on the immediacy of other problems competing for their attention. In the 320(d) program, for example, one would not expect a school system dealing with the effects of six successive tax levy failures to bring the same sense of urgency to the programs as a system without serious financial difficulties.

- *Existing policies that slow or deflect implementation.* Policies are implemented in the context of other policies, and their mutual effects produce variations in implementation. Personnel policies, for example, effect virtually all other policies. In the 320(d) program, one would expect local collective bargaining agreements to affect the way teachers are trained and given responsibilities.

- *Disagreements over the assignment of organizational responsibilities.* Over a period of time, administrative agencies develop stable relationships with each other. A new policy often disrupts these relationships. New patterns of relationships develop slowly and vary widely. If, for example, local school systems are accustomed to dealing with the State Department's Division of Curriculum and Instruction on issues related to the teaching of reading and math, the establishment of a new office to administer the 320(d) program would require a realignment of these relationships.

- *Lack of resources.* One of the touchiest issues of federally- and state-mandated policies is the resources they bring with them. Regardless of how well-funded a new program is, it exacts some cost from implementing agencies. The availability of local resources to supplement outside resources varies widely from setting to setting. School systems with declining revenue bases can-

not be expected to implement the 320(d) program in the same way as those with stable or increasing revenue bases.

Notice that, in all cases, variability in implementation has been explained without accusing state and local administrators of deliberately undermining the intent of the legislature. Observe, also, that none of the problems can really be solved by focusing more resources on regulation and compliance. We cannot *require* all implementors to resolve conflicting commitments in the same way. We cannot require administrators to ignore urgent problems that deflect their attention from programs that policymakers consider important. We cannot create constructive working relationships between state and local agencies simply by requiring them to work together. Nor can we increase the level of resources available for a program by increasing regulations. In short, all of these problems require programmatic rather than regulatory solutions.

Some proportion of variability in implementation can, however, be explained by disagreement and ambiguity over the aims of policy. Administrators and constituency groups often use the implementation process as a way of demonstrating their opposition to a policy. By exploiting ambiguities in legislative intent, by pointing to particularly glaring practical problems in adjusting to a new policy, and by skillfully exercising delegated control, actors who disagree with the intent of a policy can blunt its impact. Alert legislators and high-level administrators understand that implementation is the continuation of policymaking by other means, and they are wise to the political effect of implementing decisions.[6] It is possible to categorize the variety of ways that disagreements with policy are expressed in the implementation process.

- *Diversion of resources.* When the implementation of a policy requires the transfer of money from one agency to another, a certain proportion of the funds will be used to support existing or new activities that have no direct relationship to the purposes of the policy. New funds are sometimes used to increase administrative staff and reduce workloads, to mollify important constituency groups, or to free-up existing funds for other purposes. In the 320(d) program, we might find, for example, that local districts used program funds to pay some portion of the salaries of curriculum supervisors who had been on the payroll prior to the beginning of the program. While the curriculum supervisors themselves might work directly on the teaching of basic skills, the

funds that previously paid their salaries can now be diverted to purposes completely unrelated to those of the 320(d) program. The effect of the transfer of funds is not to increase activity related to the teaching of basic skills, but simply to increase administrative slack at the local level.

- *Deflection of goals.* As implementation progresses, policies attract the attention of constituencies with their own objectives and their own visions of what a good program should be. These groups view success or failure of the policy in terms of their own objectives rather than those of the legislature or the administrative agency. As a consequence, program activities become directed at goals that have little or no relationship to what legislators and high-level administrators consider to be the central objective of the program. With regard to the 320(d) program, parent groups might argue that the effective administration of the program requires the establishment of parent advisory committees. Teachers might argue for teacher-run advisory and training groups. These groups then become ends in themselves because they are important to parents and teachers, and the program at the local level begins to focus increasingly on the mechanics of teacher and parent participation rather than on the teaching of basic skills.

- *Outright resistance.* In the final analysis, policies may require implementors to do things that they oppose and are able to resist. In some instances, opposition takes the form of tokenism or passive resistance. If a local school administration sees the 320(d) program as an infringement on its prerogatives, it might designate a former football coach as "Basic Skills Coordinator" and locate the coordination office next to the locker room. In some instances, opposition takes the form of active resistance. School systems may simply refuse to participate or test the department's mettle by openly refusing to implement certain requirements.

All of these actions can, to a degree, be countered with tighter regulation. Administrators can prescribe more detailed rules for expenditure of funds, they can require that certain organizational features be part of every local project, and they can devote additional time to direct surveillance and to actions designed to demonstrate their willingness to enforce compliance. All of these devices are part of the administrative machinery of virtually every service delivery program. But each of these devices has a tangible cost associated with it.

Each additional increment of regulation brings an increment of administrative complexity—an additional step in the grant application process, another person responsible for monitoring compliance, a more elaborate system of checks and signoffs, and the like. There are practical limits on the amount of administrative complexity a program can bear and still focus on its capacity to deliver tangible benefits. At some point, the investment in regulatory machinery becomes greater than the investment in service delivery, and, at that point, the emphasis shifts from producing an effect to maintaining a complex surveillance and enforcement system.

Surveillance and enforcement can elicit conformity, but they cannot elicit cooperation and commitment. The more rule-bound and compliance-oriented the implementation process becomes, the less one would expect administrators to use their own abilities and the more one would expect them to rely on other people's guidance. Increased enforcement enhances opportunities for passive resistance: "I'm sorry," the local administrator argues, "but we can't proceed until we get clarification on this issue from the state director." It also creates abundant opportunities for the deflection of goals: "Before we can deal effectively with local agencies," the state director argues, "we've got to have a clear-cut process for resolving these compliance issues." Increased enforcement also diverts resources away from program substance and toward compliance: "We would like to spend more time with teachers," the local curriculum supervisor argues, "but we've got to do the paperwork for the state department."

Assessing Variations in Implementation

If the 320(d) director is smart, the program review will be designed around the issue of local capacity, rather than compliance. If he focuses on compliance, the director risks increasing the complexity of his task. If the focus is on local capacity, the director looks for opportunities to increase delegated control and hence to reduce the complexity of the task. But the director also has to attend to the chair's concern for whether the program is successfully reaching its target group. One solution to this problem is to design the review around the question, "Which variations in local projects seem to enhance their capacity to reach their target groups successfully, and which seem to undermine their capacity?" Designing the review around this question does several things. First, it accepts local variability as a fact. Second, it establishes a

relationship between variability and program success in each local setting, allowing local programs to be judged on their own terms. And third, it puts a premium on *diagnosing* the causes of noncompliance and failure to perform, rather than enforcing uniform compliance. By stating the purpose of the review in this way, the director has effectively said that *variability of implementation will be used as a device for improving the program.*

Suppose now that the director's review is completed. Being alert to the distinction between capacity and compliance, the director has designed the review around a series of questions that relate 320(d) funds to evidence of change in local practice and to locally generated information on student outcomes. With the assistance of an outside contractor, 60 local districts out of the roughly 200 in the state receiving 320(d) funds have been sampled. The major findings of the review are as follows.

1. Use of teacher-generated curriculum materials seems to be associated with greater change in teaching practice. Where teachers have worked together compiling and adapting curriculum materials, rather than simply using standard materials, there is evidence that 320(d) funds have had greater influence on their classroom practice.[7]

2. First-year test results at the local level indicate that evidence of improvement in basic skills is positively related to the amount of time teachers report they spend on focused instructional activity in reading and math. A rough count of the time teachers report they spend on basic skills instruction is positively related to differences in classroom performance on standardized achievement tests.

3. In 12 of the 60 local districts, more than 30 percent of 320(d) funds were used for activities that could not be related directly to instruction. A review of local project budgets showed that most local districts spent between 15 and 25 percent of their 320(d) funds on activities not directly related to classroom instruction; in 12 of the 60, however, this proportion was 30 percent or greater.

4. Ten of the 60 local districts followed the practice of removing students from regular classrooms for basic skills instruction; 40 of the 60 made some form of individualized instruction available; and 10 made all basic skills instruction available only through

group instruction in the regular classroom. No systematic relationship could be found between these grouping practices and student outcomes on standardized achievement tests.

5. Five of the 60 local districts were unable to provide an explicit statement of how students were selected for basic skills instruction; 30 of the 60 indicated that their criteria for selection were based primarily on teachers' evaluations; and the remaining 25 relied primarily on standardized tests.

Allowing for the tentativity of results like these, we can begin to piece together a crude picture of how much variability there is in local practice and the degree to which variability represents intentional noncompliance or local adaptation. One might want to look more closely, for example, at the 12 districts that spent more than 30 percent of their 320(d) funds on noninstructional activities and at the five districts that could not explain their selection procedures. Simple indicators like these can be used to sort out serious compliance problems.

But the other evidence indicates considerable diversity in local practice that can be used to focus on more-or-less successful variations. Findings 1 and 5, for example, indicate a heavy reliance on teacher judgment in the selection of children and curriculum materials. One might want to take a closer look at how teachers exercise this judgment, with an eye to informing other teachers of apparently successful practices. Findings 2 and 4 give some hints about practices that local administrators can affect—instructional time and grouping practices—and their relationship to student success. In short, the review speaks both to issues of compliance and capacity, and it does at least a crude justice to local variability.

The important question is how the director, the commissioner and the chair can address these issues in a constructive way. The following exchange takes place after the director's review is completed.[8]

Chair. *I've looked at your review of the 320(d) program and I have a number of questions to ask you. Perhaps the best place to start is to ask whether your review has given you any clearer idea of how many local districts have just plain failed to do anything useful for children with basic skills problems.*

Director. *Let me begin by saying that I think there are few, if any, districts that have failed to do anything useful. But our review has led us to focus more sharply on those districts that seem to be having the greatest difficulty getting programs underway. We found that five of the 60 districts we surveyed were unable to state how they selected students for attention; these districts are out of compliance with the law and regulations, which say very clearly that recipients of 320(d) funds must state their selection criteria. So we intend to take a close look at the remaining districts in the state to discover how many of them have the same problem. When we've identified this group of districts, we'll focus a portion of our staff time on working with them to assure that their programs meet minimum standards of compliance.*

Chair. *That sounds reasonable. What about districts that meet the minimum requirements but still aren't teaching kids reading and math? Is there anything you can do about that?*

Director. *I think there are a couple of ways to get at that problem. One way is to take a closer look at how 320(d) funds are being used by local districts. Our finding, for example, that about one-fifth of the districts we surveyed use more than 30 percent of the funds for noninstructional purposes suggests that we've got some kind of problem getting the resources to the kids. We may need some new legislative authority. If we do, we'll ask for it.*

Another way to approach the problem is to look for particularly outstanding programs or practices and find some way of communicating these to the districts that need them. We've started to get a handle on that with our findings about teacher-developed materials, instructional time, and grouping practices. But it's become clear to us that we need to know a lot more about local programs before we start publicizing ways of improving local practices. That's why I'd like to focus most of our effort on identifying and understanding successful programs, rather than enforcing compliance with the regulations. It just seems to me that the payoff is potentially greater when you try to understand what makes programs work.

Chair. *If you're prepared to demonstrate to me that you've got the compliance issue under control, I agree that it makes sense to work on identifying successful programs. I guess I'm not clear where all this leads, though. When we understand a few things about successful programs, what do we do next? Do we write them into the law?*

Commissioner. *I have great difficulties with the idea of requiring all local districts to do things that we find are associated with success in a few settings. In the first place, we can never be sure about the conditions that make for local success; they're probably much more complicated than our data tell us they are. Second, I'm very concerned about the effect of mandating practice on local initiative and invention. How much inventive ability do we lose by telling people how to do their jobs? As a policy matter, I would argue that the more we can hold local people to their own standards of performance—get them to do their own diagnosis and evaluation—the better off we'll be. The purpose of collecting information on successful practices is to stimulate local invention, not to mandate that things be done a certain way.*

Director. *I agree with the commissioner. The last thing I want to do as an administrator is to tell teachers how to teach reading and math. That seems to me to defeat the purpose of having a solid group of professionals in the classrooms. What we can do, though, is increase the level of information on successful practices and increase the opportunities for exchange of that information. It seems to me that we are uniquely well-situated to do that.*

Chair. *I'm generally pleased with the responsiveness of the review and with your comments about how you intend to proceed. I still have questions about this issue of how to improve local practice, but they're better saved until you have more information. Can we agree to get together again and focus primarily on that issue?*

Commissioner. *I certainly would welcome the opportunity.*

Director. *As would I.*

Notice how the ground has shifted from the first two exchanges. The central issue of the first two exchanges—why aren't 320(d) funds getting to the kids who need them most?—has now been broken down into three more precise questions: How are districts selecting children for participation in the program? How are districts allocating 320(d) funds between instructional and noninstructional costs? And how do local instructional practices relate to the benefits children gain from the program? The chair, the director, and the commissioner understand the difference between regulatory and programmatic issues and have used this distinction to isolate problems that can be solved with compliance from those that have more complex programmatic solutions. Furthermore, they have dealt very gracefully with the complexity of their problem. They have begun to distinguish instances where hierarchical control is appropriate from those where delegated control is appropriate. They have begun to narrow the domain of hierarchical control to a certain set of minimum conditions that all local programs must meet in order to receive funds. And they have begun to specify the limits of their ability to control certain important activities, notably the process of classroom instruction. In short, their recognition of the complexity of the problem has given them more, rather than less, competence in dealing with the problem.

The Power of the Bottom Over the Top

Up to this point, the implementation problem has been defined exclusively from the point of view of policymakers and high-level administrators. We have been concerned with the ability of people at the top of the pyramid to understand and control the actions of people at the bottom. Shift positions now, and try to see the problem from the point of view of those at the bottom.

In a very basic sense, the most important actors in the 320(d) program are individual teachers and students. An enduring fact of all service delivery programs—education, health care, social services, manpower, and so forth—is that they depend heavily on the quality of the interaction between service-giver and client. If we isolate the factors that have the greatest effect on the quality of this interaction, we quickly discover that very few, if any, of them are subject to direct administrative control.

School administrators simply cannot supervise the work of teachers in the same way as, say, a shop superintendent might supervise machinists or a floor manager might supervise clerks in a department store. Much of the success of the service in education depends on the sensitivity of the teacher to the individual attributes of students and on the teacher's ability to maintain a well-organized, task-oriented classroom. The role of administrators in the instructional process is necessarily marginal. Teachers work almost exclusively in self-contained classrooms, exercising a high degree of discretion in the management of classroom activities. Direct administrative control over classroom behavior is not only extraordinarily difficult, but also very risky. Administrators simply do not command enough specific information about teacher-student interactions to be effective supervisors of instruction, even if they are so inclined.

To be sure, many things that school administrators do can influence classroom instruction in positive and negative ways. Administrators can select teachers, reward them in modest ways, establish schoolwide or districtwide performance goals, focus public attention on certain parts of the school program, and mobilize outside financial support for innovative projects. All of these things can have a positive effect on classroom instruction. But administrators can also select and reward teachers on completely arbitrary criteria that have no direct relationship to the quality of classroom instruction. They can create activities in schools that divert energy and attention away from classroom instruction; writing instructional objectives might be one of these activities. And they can expose certain parts of the school program to public criticism, leaving teachers to fend for themselves. In other words, administrators can do many things to obstruct or enhance classroom instruction, but they cannot directly control it. All of the things that administrators do are at least one step removed from the critical face-to-face transaction between teacher and student.[9]

Think for a moment about the individual teacher's role in the 320(d) program. Word comes to the teacher from a variety of sources—state and local school administration, parents, newspapers—that something needs to be done to improve reading and math skills. The teacher searches his or her experience for clues as to the accuracy of this conclusion, and forms a positive or negative attitude toward it. The district then formulates a program in response to the 320(d) legislation and guidelines; maybe teachers are involved in formulating the program, maybe not. Teachers will judge the net effect of the pro-

gram by whether it enhances or obstructs the instructional process in the classroom. Training, special materials, and advice on classroom organization can be delivered to teachers as part of the implementation process, but if these things are not translated into tangible classroom behavior and if that behavior does not contribute to the teacher's sense of control over his or her own classroom, the program is a diversion of resources and a waste of teachers' time.

Teachers receive a variety of signals about what to do in the classroom. In addition to the signals they receive from the 320(d) program about reading and math skills, they hear about their responsibility for teaching democratic values, discipline, the free enterprise system, health and nutrition, career choice, and the history of western civilization, to mention but a few topics. It is the teachers' responsibility to turn these signals into a well-organized strategy of instruction that responds to the range of skills and abilities they find among students in the classroom. In short, *teachers will make most of the important discretionary choices in the implementation of the 320(d) program.*

If school district administrators are smart, they will recognize this fact and *design their implementation strategy around maximizing the individual teacher's control of the instructional process.* But to do this, they, like the chair, the commissioner, and the program director, must recognize the difference between compliance and capacity. Teachers can be required to perform certain activities—attend training sessions, develop instructional goals, use certain materials—but the performance of these activities does not assure success. In fact, if it diverts too much attention away from the classroom, it will virtually guarantee failure. So the essential problem for local school administrators is how to direct teachers' attention to the basic skills problem and then provide the resources to respond to the problem in a way that acknowledges teacher control.

Another important feature of the teacher's role is that teachers work in a physically isolated environment, the classroom, with little opportunity for routine interaction with other teachers. Yet when teachers are asked where they get most of their ideas for new instructional practices, they reply that they rely mainly on other teachers.[10] This suggests that the way to reach teachers is to put them in touch with other teachers. not to have administrators tell them what to do.

Inefficiency, Redundancy, and Protecting the Inept

Back away from the specifics of the 320(d) program for a moment and think about the general features of the system we have been describing. The system is *bottom heavy* and *loosely coupled*.[11] It is bottom heavy because the closer we get to the bottom of the pyramid, the closer we get to the factors that have the greatest effect on the program's success or failure. The system is loosely coupled because the ability of one level to control the behavior of another is weak and largely negative. This characterization is true, in varying degrees, of all the relationships examined thus far: the chair's ability to control the commissioner, the commissioner's ability to control the director, the director's ability to control local school administrators, and the local school administrator's ability to control teachers. The skillful use of delegated control is central to making implementation work in bottom-heavy, loosely-coupled systems. *When it becomes necessary to rely mainly on hierarchical control, regulation, and compliance to achieve results, the game is essentially lost.* Moving from delegated control to hierarchical control means moving from reliance on existing capacity, ingenuity, and judgment to reliance on rules, surveillance, and enforcement procedures. Regulation increases complexity and invites subversion; it diverts attention from accomplishing the task to understanding and manipulating rules.

Two criticisms are commonly levelled at bottom-heavy, loosely-coupled systems: They are inefficient, and they protect incompetence. Inefficiency, the critics argue, stems from redundancy. Too many people making autonomous choices, with no rational division of labor, results in overlap, duplication, and a general confusion of functions. In the 320(d) program, the critics would argue that it is absurd to think of each teacher essentially inventing his or her own reading and math curriculum; the inefficiencies would be enormous. It would be much more sensible to develop a few model curriculums from the best available sources and train teachers in how to use them.

Likewise, the critics argue, not everyone can be trusted to exercise autonomy in the correct way; lack of central control allows pockets of incompetence to develop and remain essentially immune from discovery. Some teachers and administrators are simply incapable of performing adequately without close supervision. To the extent that bottom-heavy, loosely-coupled systems protect the inept, they reinforce inefficiency.

These criticisms point to simple, straightforward solutions. We should streamline administrative structures, eliminating overlap and duplication, tightening coordination and control. We should hold people accountable for the results they produce, stating clear performance standards and regularly evaluating them.

Proposals of the above type stem from a set of assumptions about the operation of complex administrative structures that do not stand up in the face of accumulating evidence. First, take the notion that redundant systems are inefficient and streamlined systems are efficient.[12] Do we say that a commercial aircraft with a triple-redundant landing gear system is inefficient? Of course not. Redundancy is a powerfully efficient device for increasing the reliability and safety of the aircraft. Would we say that a house wired in series is more efficient than one wired in parallel? Series wiring uses roughly half the amount of wiring material, but the result is that each connection is wholely dependent on the preceding one for its electrical current. In contrast, parallel wiring allows each connection to function independently of others. Thus, redundancy dramatically increases the reliability of an electrical system at a relatively modest additional cost. To say that redundant systems are inefficient is not only superficial but largely false.

Tightly-coupled, highly-centralized administrative structures are like houses wired in series; there is so little redundancy that the failure of one unit means the collapse of the whole system. If the organization's task is relatively simple, say brickmaking, the system's failure is of little consequence and can be remedied easily. But if the task is complex, like the implementation of the 320(d) program, the absence of redundancy can be disastrous; a small failure anywhere in the system can disrupt a long, interdependent line of relationships, creating confusion and disorder. Bottom-heavy, loosely-coupled systems are difficult to administer, but they are extraordinarily rich and robust because they are redundant. *The more complex the task, the more important redundancy is to the efficient accomplishment of the task.*

Furthermore, *most of the redundancies that we observe in the implementation of policy are the result of deliberate political choices.* The division of authority between Federal, state, and local government is highly redundant; these relations are characterized by enormous overlap of functions, continual dispute over the proper boundaries of authority, and a high level of ambiguity over who is responsible for what function. The complexity of these relations makes implementa-

tion difficult, but a more streamlined, rationalized system would not necessarily be more effective. Existing jurisdictional boundaries, in effect, protect us against too heavy a reliance on the competence or incompetence of any single level of government. The political genius of federalism stems from its skillful reliance on redundancy.

Returning to the 320(d) example, the redundancy of delegated control can be seen as fail-safe device: The more responsibility is devolved toward the bottom of the system, the greater the number of people who will be actively involved in searching for a solution to the reading and math problem, and the higher the likelihood that more effective programs will be designed and implemented at the local level. The more responsibility is centralized, the more people will rely on direction from above, and, as a result, fewer people will be actively engaged in searching for solutions to the problem. Moreover, hierarchical control puts the responsibility for finding solutions to the reading and math problem in the hands of those who are least likely to discover them—adminstrators. Alert administrators understand that delegated control and redundancy are an important form of insurance against organizational failure.

But what about the argument that bottom-heavy, loosely-coupled systems protect the incompetent? There is no question that errors are more visible in tightly-coupled, centralized systems. What could be more visible than one individual or one unit of an organization bringing the entire system to a grinding halt? The more redundant the system, the more difficult it is to find ineffective parts because errors are less visible. But suppose our purpose was not to ferret out and penalize incompetence as much as it was to improve the overall performance of the system. If we define our purpose this way, redundancy becomes a powerful asset rather than a liability. Instead of investing organizational resources in making errors more visible—that is, in constructing accountability systems—we can invest them in increasing the exchange of information about more- and less-effective practices. The information would then be accessible to everyone, competents and incompetents alike. This does not insure that the people who need the information most will get it. But it does at least play to the strength of bottom-heavy, loosely-coupled systems: they are extraordinarily rich in specific information about essential tasks. We can then say that the responsibility of administrators is not to ferret out and penalize incompetents, but rather to devise ingenious ways of putting information and experiences that will improve their performance in the path of incompetents.

Research on the implementation of new educational programs consistently finds that peer relationships—teachers training teachers, teachers working jointly on the development of materials, and so forth—are strongly related to success of implementation and continuation of programs. It has also been found that implementation and continuation are strongly related to the individual teacher's sense of efficacy and control in the classroom.[13] Administrative actions that are designed to increase the density of interaction at the delivery level, rather than increase the dependence of the delivery level on hierarchical control, are more likely to have a positive effect. Furthermore, such actions capitalize on the most prominent attribute of complex systems, their redundancy.

Where does this leave the chair, the commissioner, and the program director? It seemingly leaves them in a very difficult position. To the extent that they acknowledge that they are operating in a bottom-heavy, loosely-coupled system, there appears to be little for them to do. The standard devices of administrative control—regulation, streamlining, accountability—appear to have limited or perverse effects. We seem to have relegated policymakers to a helpless and largely peripheral role in the implementation of the 320(d) program.

The situation is actually quite the contrary. What we have done is to pare away the easy, superficial solutions to implementation problems and focus on the more difficult, challenging ones. Legislators and high-level administrators have a significant role in these solutions, but that role requires them to adopt a somewhat different view of the process than the one they conventionally hold. Recall that we opened the discussion of bottom-heavy, loosely-coupled systems by flipping the system on its head and asking what we needed to know about the delivery level in order to make intelligent policy decisions.[14] With some elaboration, this is exactly the process of reasoning that legislators and high-level administrators can use to affect implementation.

Backward Mapping

People at the top of the system tend to think of themselves as initiators of the implementation process; for them, implementation consists of a series of actions emanating from the top and reaching to the bottom. Suppose, for purposes of discussion, we simply reverse this logic. *Begin with the assumption that implementation begins at the bot-*

tom, not at the top.[15] At first this sounds like nonsense. It upsets our whole notion of the relationship between policymaking and administration. But with a little thought it turns out not to be such an alien idea.

It is clear that the success of policy depends heavily on the capacity of people at the delivery level. This is true in two senses. First, many policies originate with perceived failures of the delivery system. The 320(d) program was based on the perceived inability of schools to teach reading and math adequately. Second, even those policies that do not originate with delivery system problems require some form of organization to implement them. Eventually all policies require some form of organization, and that organization constrains and determines, in certain important ways, how the policy will be implemented. Understanding what is good policy depends, to some degree, on understanding the mechanism for its implementation. We might even say that *we do not clearly understand what a policy should be until we have thought about how it will be implemented.* This kind of reasoning tracks with the commonsense intuition of legislators and high-level administrators. The smart policymaker will say early in any discussion of a new policy, "Before we go too far with this idea, can you tell me what it will look like in practice?" This is often an embarrassing question that sends staff scurrying back to the drawingboard, because, as they begin to describe what the idea will look like in practice, they discover that it was not a very good idea to start with.

So it is not nonsensical to say that, in some ways, implementation begins at the bottom of the system. If a policy does not make sense at the delivery level, it is not going to make sense at the top of the system.

How, then, can policymakers protect themselves against ideas that make no sense at the delivery level? One way is by using a form of reasoning called "backward mapping."[16] Instead of beginning at the top of the system with a new policy and reasoning through a series of actions required to implement it, begin at the bottom of the system, with the most concrete set of actions, and reason backward to the policy. In the case of the 320(d) program, the reasoning process might look something like this:

- *What is the problem?* Poor performance by children on standardized measures of reading and math skills.

- *Where do we attack the problem?* In the classroom.

- *What has to happen in the classroom to improve reading and math performance?* Teachers: more instructional time on reading and math, better instructional skills, materials closely related to the teacher's strategy and style of instruction, access to other teachers confronted with the same problem. Students: motivation to master the content, reward for learning.

- *What can the local school system do to increase the likelihood that these things will happen in the classroom?* Remove conflicting instructional requirements, provide access to training for teachers, provide resources (released time, extra compensation, production of materials, etc.) for teachers to develop reading and math instruction, identify students with the greatest need, communicate program to parents.

- *What can the state education department do to increase the likelihood that these things will happen in local districts?* Remove conflicting policy requirements (with legislative concurrence), transfer information on unusually successful practices from one setting to another, assure fiscal responsibility of local districts receiving state support for basic skills programs.

- *What can the legislature do to increase the likelihood that the state education department and local school districts will successfully address the basic skills problem?* Remove conflicting policy requirements, authorize and appropriate funds, establish rules of fiscal responsibility, establish basic elements of program design: classroom as the basic delivery unit, local district support for teacher-produced curriculum, state support for transfer of unusually successful practices.

This is a very crude version of backward mapping, but it demonstrates how closely the reasoning process accords with commonsense intuitions about policy implementation. It simply formalizes the thinking that follows from the question, "What will this idea look like in practice?"

But it also forces an analytic structure on discussions of implementation: Begin with a definition of the problem, define the delivery-level unit with the greatest effect on the problem, describe what needs to happen in that unit to solve the problem, then describe for each successive level above that unit what needs to be done to support activity

at the delivery level. Notice that the process of reasoning is driven not by the policymaker's limited understanding of the problem, but by the mobilization of delivery-level expertise.[17] Policymakers do not have to pretend, as they so often do, that they know how to solve the problem. But they do have to understand *where* in the system to focus the resources necessary for solving the problem. The role of policymakers is far from marginal. They are responsible for finding the critical transactions in the system and for ensuring that the largest proportion of resources reaches them.

Control has a new meaning if we take this point of view. The ability of one level of the system to control the behavior of the next is no longer the central issue. Instead, we are thinking of *where to locate the maximum amount of delegated control, how to get resources into the hands of those who exercise it, and what forms of organization enhance the likelihood of success at the delivery level.* Control exercised in this way minimizes investment in surveillance and maximizes investment in the capacity to exercise discretionary choices that directly affect quality of service. In this sense, delegated control is more efficient than hierarchical control.

Another way of thinking about this strategy of control is in terms of a contract between policymakers and service deliverers. Contracts turn liabilities into assets: each party to a contract lacks something that the other possesses. The contract allows each to capitalize on the assets of the other. Legislators and high-level administrators can make decisions that have systemwide effects. If they are skillful and clever, they can use their breadth of understanding to shift resources from one part of the system to another. But legislators and administrators cannot pretend to understand, in anything other than a superficial way, what makes the system work at the delivery level.

Moving down the delivery system from top to bottom, you make important trade-offs. You trade breadth of understanding for depth, and you trade the ability to make large allocation decisions for the ability to make small, but very significant, delivery-level choices. Delivery-level choices are very complex. The information needed to improve delivery-level performance is dense, specific, and situational. It is not the sort of information that can be easily understood and assimilated by people at the top of the system. But policymakers rely very heavily on performance at the delivery level for their own success.

So we have the makings of a very strong contract. Legislators and agency heads cannot teach reading. Teachers cannot increase the amount of money the government spends on reading instruction. But policymakers can trade—bargain—resources for increased attention to reading instruction and for information on the effects of that attention. And teachers can trade delivery-level performance for increased resources and the ability to make discretionary choices. This bargain is a two-way affair, inherently different from hierarchical control. A contract is not an instrument of coercion. Rather, it is an efficient instrument for harnessing delegated control to policy objectives.

How would all this look in practice? Suppose there has been a full authorization cycle of the 320(d) program, and it is now time for the legislature to consider whether the program should be renewed and what changes should be made if it is renewed. The commissioner and the director have prepared a package of legislative amendments for which they would like the Education Committee's endorsement. These amendments include authority for:

- The State Department of Education to make grants to groups of teachers for curriculum development;
- Teachers to contract, independently of the school system, for in-service training with state support;
- Local school districts to contract with other school systems for the transfer of exemplary practices; and
- The state department to identify and disseminate information on exemplary practices.

In addition, the commissioner and director have prepared some administrative regulations that do not require new legislative authority. They have forwarded the regulations to the Education Committee for review and comment. These include:

- A limit of 20 percent on 320(d) funds that can be used by local districts for activities not directly related to classroom instruction (instructional activities are defined as materials, teacher training, and released time for training); and
- A requirement that local districts make available for public com-

ment criteria for selection of children for special instruction using 320(d) funds.

The following exchange explores the rationale for these amendments and regulations.

Chair. *I've reviewed your proposed changes for the 320(d) program, and I have a number of questions to ask you. The best place to start, I think, is with the basic question of how you expect these proposals to affect the performance of the individual student in the classroom. Commissioner?*

Commissioner. *The 320(d) program rises or falls on the quality of instruction in classrooms. We're not certain, and we probably never will be, what creates a productive level of interaction between teacher and student. It's not so important that we know, but it's very important that teachers know. So the department has deliberately settled on a strategy of putting resources where they are most likely to affect quality of instruction; this means putting them largely in the hands of teachers. We expect that by focusing teachers' attention on the problem of instruction in reading and math, and by increasing interaction among teachers on this subject, we will enhance their ability to respond to individual students with reading and math problems. We don't expect to generate a few "big solutions" to these problems, but we do expect to increase the level of attention focused on the problems at the classroom level.*

Chair. *Director?*

Director. *You'll recall that our interim review of the program showed a positive relationship between teacher involvement in curriculum-building and changes in classroom practice. We intend to test whether this relationship holds over the long run. In order to test it, we've got to increase the level of activity at the classroom level and create more opportunities for teachers to interact on curriculum matters. We're betting that this will have a payoff for students with reading and math problems.*

Chair. *We've heard testimony from a number of people who don't share your view. Yesterday we heard from the*

Council of Local School Administrators. Their representative said that the proposals "make the job of districtwide coordination of reading and math instruction more difficult" and that they "constitute a direct intervention by the state in local school affairs." We also heard from a local superintendent who said that the proposals are "a direct attempt to undermine the chain of command in school district administration." Don't these people have a point? Aren't you short-circuiting a lot of administrative relationships by increasing the control of teachers over program resources?

Director. *I think it's important to put our recommendations in the context of the whole program. The school system is still the administering agency for the 320(d) program at the local level. Local school systems are responsible for selecting and assigning teachers and for designing the local program. We've taken extra care to give local districts maximum flexibility in administering program funds. We haven't required them to select or assign students who receive 320(d) benefits in a certain way; we've simply said they should publicize their criteria for selection. We've only resorted to explicit regulations where we have found that local practices sometimes keep funds from reaching teachers and students. Our proposal to limit noninstructional expenditures to 20 percent is designed to limit the amount of money local districts can use to support administrators who have no direct instructional role. For districts that have taken the task of improving classroom instruction seriously, this requirement poses no particular difficulty.*

We view the proposals for support of teacher-initiated curriculum development and training not as an intervention in local district decisions but as a direct investment in activity that is likely to improve the quality of instruction. All we've done is to assure that some fraction of program funds is available for problem-solving and information-sharing at the delivery level, where the need is greatest. If increasing teachers' access to practical information threatens districtwide coordination or supervisory relationships, then it seems to me the district has a problem that goes beyond the 320(d) program. We don't expect teacher-initiated projects to cause problems in districts that have a strong commitment to the support of classroom instruction.

Chair. *Don't the proposals create a lot of overlap and confusion at the local level, though? If everything works as planned, there will probably be district-sponsored training of teachers, training initiated by teachers themselves, and training that results from cross-district exchanges of information about successful practices. Isn't there a more efficient way of getting at the problem?*

Director. *If you mean, "Is there a simpler way to deliver training?," I think the answer is "Yes." We could locate all the responsibility for training in one place, with the state or with local districts. But this would restrict the number of possibilities for exchanging information and locate responsibility in the hands of people who don't necessarily understand the problems at the classroom level. We think the payoff is likely to be greater if we increase the frequency of contact among those closest to the problem, providing them with a lot of options for access to information. If we increase the likelihood of successful classroom programs, then the strategy isn't necessarily inefficient.*

Commissioner. *As a matter of policy, I'm uncomfortable with the idea of locating sole responsibility for training in the hands of any single authority. It doesn't seem to me a good way to increase the inventive ability that is applied to a problem. I'm more interested in ways of capitalizing on diversity rather than controlling it.*

Chair. *The committee has also heard testimony from the Children's Advocacy Group that is somewhat critical of your proposals. They've said, "The department stops short of using its full regulatory authority to assure that the neediest children get the greatest access to 320(d) funds." Your proposals don't seem to speak to this issue, do they, Commissioner?*

Commissioner. *We're faced with a fairly difficult choice here. As I see it, we've got to decide whether to define the department's role primarily in regulatory terms or primarily in terms of enhancing local capacity. I've said a number of times that I prefer the latter. But issues like the one raised by the Children's Advocacy Group make my position difficult to argue. We've thought a great deal about whether we want*

to use the department's regulatory power to require local districts to select students for the 320(d) program in a certain way. We've decided that we're not in favor of it for two reasons. First, we think our resources are better used in activities that affect the quality of local programs rather than in those that assure local compliance with state guidelines. Second, we don't feel confident deciding how students should be selected, and we're more comfortable leaving that decision in the hands of local districts. So we've settled on a fairly straightforward requirement that districts should publicize their selection criteria. That at least gives local groups a chance to influence the local district's decision.

Chair. *Thank you. We'll look carefully at your proposals.*

This exchange demonstrates the essential logic of backward mapping. The chair's first concern is the effect of department proposals at the delivery level. Then, using previous testimony of school administrators and advocacy groups, the chair backs through to consider the administrative consequences of the department's proposals at the local and state levels. This approach means that the discussion will center on delivery-level problems rather than on the competing claims of rival bureaucracies. The chair, given the committee's responsibility to weigh competing political claims, may well reject the department's proposals on essentially political grounds. But the logic of the chair's questioning shows sensitivity to the delivery-level effects of political choices.

For their part, the commissioner and the 320(d) director have made a number of strategic choices in assembling their package of proposals. They have decided to bet that shifting resources toward the delivery level and increasing interaction among teachers at that level, even when this results in redundancy and overlap, will increase the likelihood that the program will affect students. They have decided to minimize the department's regulatory role and to focus regulatory attention only on those matters in which it is relatively easy to determine compliance. The 20 percent requirement can be enforced simply by checking local applications for funds against expenditure reports filed by local districts. On the sensitive issue of how students should be selected for attention, they have decided to rely on local politics.

The strategy is far from foolproof. There is no guarantee that teachers will capitalize on the availability of funds for training and

curriculum-building. Local districts will, no doubt, invent ingenious ways of asserting control over teacher-initiated projects. Where districts are given wide latitude by the department, there will be failures as well as successes. And the department's ability to initiate exchange relationships between weak districts and strong ones will depend on its cleverness and diplomacy. But, despite the obvious problems, the major strength of the strategy lies in the fact that it is predicated on the principle of increasing capacity at the delivery level. If the strategy fails to do that, then it needs to be revised.

Conclusion

Complexity can work both for and against successful implementation. When complexity results from hierarchical control within organizations and across levels of government, it diverts resources from problem-solving and focuses them on surveillance and compliance, it increases the number of steps required to translate a policy into action, and it constrains the inventive capacity of delivery-level personnel. In this sense, hierarchical control *reduces* the likelihood that policies will result in delivery-level effects. But delegated control allows policymakers to capitalize on complexity at the delivery level, using it as a source of ideas for *increasing* the capacity to deliver services. Out of delivery-level complexity grows variability in the way implementors respond to policy. Variability, far from being a threat to successful implementation, produces valuable information about more and less successful practices. If some mechanism exists for capitalizing on variability at the delivery level, then complexity operates to raise the level of knowledge required for successful implementation.

Out of this basic understanding of complexity and control come a few prescriptions for how legislators and administrators can deal effectively with implementation problems:

- *Distinguish between compliance and capacity.* There is a critical difference between the ability or willingness of implementors to comply with rules and their capacity to successfully deliver a service. Implementation depends more on capacity than it does on compliance. A large part of the skill required to solve implementation problems depends on the ability of policymakers to determine where compliance is required and where success depends on enhancing delegated control.

- *Distinguish between implementation variations that result from a failure to comply with basic regulations and those that result from differences in capacity.* The two sources of variation require completely different responses. Variability, in and of itself, does not prove either the success or failure of implementation. The portion of variability that results from a failure to comply with basic regulations can be addressed with surveillance and enforcement. But variability that results from differences among implementors in their ability to define and solve delivery problems is a major resource in improving delivery-level performance. If policymakers view all variability as suspect, they not only increase the complexity of their regulatory task, they also eliminate the main source of ideas for successful implementation.

- *Regulate only those activities for which it is possible to specify a clear standard of performance and which constitute minimum prior conditions for successful implementation.* If a certain proportion of a local project's budget is not spent on activities directly related to the delivery of services, one can say that some defensible minimum condition for successful implementation has not been met. The more vague the standard of performance, the greater the effort required to enforce the standard, and the less likely that resources will be targeted at the delivery level. Standards that go beyond minimum conditions of successful implementation effectively put decisionmaking responsibility in the hands of people with limited knowledge of delivery-level problems.

- *Focus resources as close as possible to the point of delivery.* Policies designed to improve the delivery of services depend heavily on discretionary choices at the delivery level. To have maximum effect, resources have to flow primarily to those points in the delivery system where they are most likely to affect discretionary choices. The farther away from the point of delivery, the less the likelihood that resources will affect the capacity to deliver, and the greater the complexity of the administrative mechanism required to move resources. The practical effect of this strategy is to increase the complexity of interaction among those closest to the delivery level and to decrease the complexity of mechanisms designed to control their behavior from above.

- *Evaluate policy alternatives by mapping backwards from the point of delivery to the point where policy decisions are made.* If

delivery-level performance is the basic determinant of successful implementation, then consideration of policies ought to start with their delivery-level effect. Begin with a statement of the problem to which the policy is addressed, define the delivery-level unit with the greatest effect on the problem, describe what needs to happen in that unit to solve the problem, and then describe for each successive level above that unit what needs to be done to support activity at the delivery level.

NOTES

1. This paper was written for the School Management and Organization Studies Team at the National Institute of Education, Department of Health, Education, and Welfare. It will be followed by another paper, "Complexity and Control: Theory and Action in Policy Implementation," which gives a more detailed presentation of the difficult theoretical issues raised here. Special thanks to Marc Tucker and Fritz Mulhauser of NIE for initiating the paper and for their kind support and patience while it was being written. Thanks also to Walter Williams, my colleague at the Institute of Governmental Research, for his assistance in editing and circulating an earlier version. During my work on the paper, I was also engaged, with Milbrey McLaughlin of the Rand Corporation, in a study of state education agencies. The paper shows the influence of our extended conversations about that project, and I am indebted to her for her help in framing a number of ideas. Useful and detailed comments on an earlier draft were given by Chris Argyris, Robert Levine, Jerry Murphy, Alan Rosenthal, and Don Sloma, all of whom have grappled with the problems discussed here, both as practitioners and researchers. The paper also benefited from a discussion, in May 1979, with NIE's Study Group for Research on Law and Government in Education. Thanks go to members of the committee and to Don Burnes, head of the Legal and Governmental Studies Team for their useful critical comments. The epigraph is from Rufus E. Miles, Jr., *Awakening from the American Dream: The Social and Political Limits to Growth* (New York: Universe Books, 1976), 170.

2. Webster's dictionary says that something is complex if it "is made up of many elaborately interrelated or interconnected parts, so that much study or knowledge is needed to understand or operate it." Herbert Simon describes a complex system (circularly) as "one made up of a large number of parts that interact in a non-simple way," adding that "given the properties of the parts and the laws of their interaction it is not a trivial matter to infer the properties of the whole." [Herbert Simon, "The Architecture of Complexity," in Joseph Litterer, ed., *Organizations: Systems, Control, and Adaptation* (New York: Wiley, 1969, 2d ed.), 99.] Todd LaPorte argues that "the degree of complexity of organized social systems... is a function of the *number* of system components..., the relative *differentiation* or variety of these components..., and the degree of *interdependence* among these components." [Todd LaPorte, "Organized Social Complexity: Explication of a Concept," in LaPorte, ed., *Organized Social Complexity* (Princeton: Princeton University Press, 1975), 6.] Related sources on the meaning of complexity are: Ronald Brunner and Garry Brewer, *Organized Complexity: Empirical Theories of Political Development* (New York: Free Press, 1971), and Paul Lawrence and Jay Lorsch,

"Differentiation and Integration in Complex Organizations," *Administrative Science Quarterly*, Vol. 12 (1967), 1-47.

3. For more detailed discussions of the meaning of implementation analysis see: Paul Berman, "The Study of Macro- and Micro-Implementation," *Public Policy*, Vol. 28 (1978), 157-184; and Walter Williams, "Implementation Analysis and Assessment," in Walter Williams and Richard Elmore, eds., *Social Program Implementation* (New York: Academic Press, 1976), 267-292.

4. For a fuller treatment of the regulatory view of implementation see: Francine Rabinovitz, Jeffrey Pressman, and Martin Rein, "Guidelines: A Plethora of Forms, Authors, and Functions," *Policy Sciences*, Vol. 7 (1976), 399-416, and the accompanying articles in that number of the journal. The growing anti-regulation literature includes: James Q. Wilson and Patricia Rachal, "Can Government Regulate Itself?" *Public Interest*, No. 46 (Winter 1977), 3-14; Eugene Bardach and Lucian Pugliaresi, "The Environmental Impact Statement vs. The Real World," *ibid.*, No. 49 (Fall 1977), 22-38; and Albert Nichols and Richard Zeckhauser, "Government Comes to the Workplace: An Assessment of OSHA," *ibid.*, 39-69.

5. The following discussion is adapted from Pressman's and Wildavsky's analysis of "The Complexity of Joint Action" in Jeffrey Pressman and Aaron Wildavsky, *Implementation* (Berkeley: University of California Press, 1973), 87-124.

6. The following discussion is adapted from Eugene Bardach, *The Implementation Game* (Cambridge, Mass.: MIT Press, 1977), 65-177.

7. This was an actual finding of the Rand Corporation's study of federally-mandated education programs. See Milbrey McLaughlin, "Implementation as Mutual Adaptation: Change in Classroom Organization," in Williams and Elmore, eds., *Social Program Implementation* (New York: Academic Press, 1976), 167-180.

8. I have skipped over the important topic of how one would actually go about designing and conducting a review of program implementation. The best recent source on that subject is Jerome T. Murphy, *Getting the Facts* (Santa Monica, Calif.: Goodyear Publishing, 1980).

9. One ought not assume that this lack of connection between administrators and service deliverers is characteristic only of social service organizations. A fascinating example of the same problem in sanitation services comes from Jerry Mechling's analysis of New York City's En-

vironmental Protection Agency. Mechling argues that a number of high-level decisions on sanitation — increasing the size of garbage trucks, changing shift patterns, et cetera — depended for their success or failure on the work patterns, aspirations, discretionary choices of garbage collectors. His message is that analysts ignore these things at their own peril. Jerry Mechling, *The Roles of Policy Analysts in Large Public Organizations: A Case Study of the New York Environmental Protection Agency* (unpublished doctoral dissertation, Woodrow Wilson School, Princeton University, 1974), quoted in Erwin C. Hargrove, *The Missing Link: The Study of the Implementation of Social Policy* (Washington, D.C.: Urban Institute, 1975), 28-31.

10. Dan Lortie, *Schoolteacher: A Sociological Study* (Chicago: University of Chicago Press, 1975), 70.

11. For a fuller discussion of bottom-heavy and loosely-coupled systems see: Richard Weatherly and Michael Lipsky, "Street-Level Bureaucrats and Institutional Innovation: Implementing Special Education Reform," *Harvard Educational Review*, Vol. 47 (1977), 171-197; and Karl Weick, "Educational Organizations as Loosely Coupled Systems," *Administrative Science Quarterly*, Vol. 21 (1976), 1-18.

12. The following discussion is drawn from Martin Landau, "Redundancy, Rationality, and the Problem of Duplication and Overlap," *Public Administration Review*, July/August, 1969, 346-358.

13. Paul Berman, Milbrey McLaughlin, et al., *Federal Programs Supporting Educational Change, Vol. VII: Factors Affecting Implementation and Continuation* (Santa Monica, California: The Rand Corporation, 1977); and Michael Fullan and Alan Pomfret, "Research on Curriculum and Instruction Implementation," *Review of Educational Research*, Vol. 47 (1977), 335-397, especially 375ff.

14. Another statement of this point of view can be found in Eleanor Farrar, John DeSanctis, and David Cohen, "Alternative Conceptions of Implementation," unpublished paper, Huron Institute, Cambridge, Massachusetts, October, 1978.

15. For a fuller statement of the theory lying behind this argument see: Richard Elmore, "Organizational Models of Social Program Implementation," *Public Policy*, Vol. 26 (1978), 209-217.

16. The term "backward mapping" and the logic of analysis come from Mark Moore at the Kennedy School of Government, Harvard University. I am indebted to him for sharing these thoughts with me. For a more extended treatment of this idea, see: Richard Elmore, "Backward

Mapping: Using Implementation Analysis to Structure Program Decisions," *Political Science Quarterly*, Vol. 94 (1979-80), 601-616.

17. A fuller statement of this argument can be found in Dale Mann, "The User-Driven System and a Modest Proposal," in Dale Mann, ed., *Making Change Happen* (New York: Teachers College Press, 1978), 285-307.

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Richard F. Elmore has been studying policymaking and the execution of policy in several fields for over a decade. With graduate training in political science, he took positions in the Office of Legislation in the Department of Health, Education and Welfare, and in the Deputy Commissioner's Office in the U.S. Office of Education in Washington. There he began the close study of Federal programs that he has continued to the present. His studies include research on the Follow Through program, career education, and title IV of the Elementary and Secondary Education Act (which supports locally-developed innovations in education). At the state level, he is now carrying out a major study of the politics of school finance reform in California, under grants from the Ford Foundation and NIE. He edited *Social Program Implementation* (Academic Press, 1976) with Walter Williams, and is a consultant to the designers of President Carter's major social program initiative of 1980, the youth education and employment effort. He holds a doctorate from Harvard University's Graduate School of Education, and he is currently a professor in the School of Public Affairs, University of Washington, and Assistant Director of the Institute of Governmental Research at that university.